

would be allowable if rewritten to overcome the rejections. Applicant respectfully traverses these objection and rejections.

With respect to the objections of claim 1, Applicant has amended Claim 1 according to the Examiner's suggestions.

With respect to the rejection under 35 U.S.C. §112, Applicant has amended claims 1, 3, and 5, wherein all essential elements and their associated pertinent functions are precisely described based on the existing specification and drawings. There is no new matter added. The amended claim 1 and its dependent claims 2-6 shall overcome the Examiner's 35 U.S. C. §112 rejection.

In regards to the rejection of claims 1-2, and 4-5 under 35 U.S.C. §103(a) as being unpatentable over Leonard, Wang and Eastman, Applicant respectfully disagrees. Eastman discloses a method of constructing a heat pipe with a sintered wick containing liquid tunnel by using non-bonding base fixture and a mandrel, creating a clearance space between the inner surface of the pipe and outer surface of the mandrel, then it places non-bonding rods at locations as the desired liquid tunnels to be formed, and packs the rest of the clearance space with powder capable of being sintered. It heats the pipe and sinters the powder into a rigid wick structure, and later removes the rods where leaving longitudinal tunnels with open ends in the wick structure.

Wang discloses a method making a ceramic coated exhaust manifold. The method first fills the shell with slurry so as to thoroughly wets the inside surface of the shell. Then it empties the excess slurry and dries the adhesive layer. By repeating the process, the inner surface of the manifold is coated with many layers of coating.

Leonard discloses a method of coating a sintered metal wick layer on the inside of a pipe by injecting slurry into inside of a rotating pipe. Then adjusts the rotating speed to ensure the complete

coating of the inside surface of the pipe. Sleeves are inserted into the ends of the pipe to provide steps for setting the final coating thickness of slurry. The method indicates, after the slurry is injected, that the rotating speed of the pipe must be increased to approximately 3000 rpm to force the slurry spread out against the inside wall of the pipe. (See column 4, lines 55 – 63 of the Leonard's patent) Leonard's method requires a high speed rotation to complete the coating. The Examiner states that it would have been obvious to one of ordinary skill in the art to modify Leonard's method from rotating to vibrating as suggested by Wang. Applicant respectfully disagrees with such combination. First, if we replace the rotation requirement in Leonard method with a vibration, then Leonard's method won't work, the slurry will not be uniformly distributed evenly on the inside wall of the pipe. Second, not only a rotation is required, but it must reach a certain high speed rotation rate to achieve the intended result. Overall, without rotation, Leonard's method won't work.

The Examiner further states that Eastman teaches controlling the thickness of a metal powder layer. Eastman uses a non-bonding base fixture and a mandrel to create a clearance space between the inner surface of the pipe and outer surface of the mandrel, and packs the rest of the clearance space with powder capable of being sintered. Then heats the pipe to get a wick layer from the sintered powder. Thus the thickness of the clearance space is the thickness of the metal powder layer. Eastman must use a non-bonding base fixture and a mandrel to controls the thickness of wick layer by forming the space between the outside wall of the mandrel and inside wall of the pipe. Leonard uses inserted sleeves at pipe ends and rotating the pipe with high speed to get the desired thickness. Both Leonard and Eastman require additional components and particular operations to control the desired thickness of the wick layer. On the contrary, the current application doesn't require any similar components or operation as Leonard or Eastman requires.

Therefore, Applicant respectfully submits that the features of claims would not be obvious to one skilled in the art regarding to Leonard, Wang and Eastman. The standard for obviousness is described in a recent case, In re Dance, 48 USPQ2d 1635 (CAFC 1998), as follows.

To establish a *prima facie* case of obviousness based on a combination of the content of various references, there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant. *In re Raynes*, 7 F.3d 1037, 1039, 28 USPQ2d 1630, 1631 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Obviousness can not be established by hindsight combination to produce the claimed invention. *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). As discussed in *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985), it is the prior art itself, and not the applicant's achievement, that must establish the obviousness of the combination. In re Dance, 48 USPQ2d 1635, 1637 (CAFC 1998).

Applicants respectfully submit that there is no teaching, suggestion or motivation within the prior art to combine the prior art as the combination of features recited in Applicant's claims. Focusing on "vibrating the container" and "forming a thin film of powder metal deposited on the interior bottom surface of the container, wherein the thin film is thinner than about 0.1mm" as asserted in independent claim 1:

filling the powder metal mixture in the container;  
vibrating the container;  
 vaporizing liquid from the powder metal mixture; and  
forming a thin film of powder metal deposited on the interior bottom surface of the container,  
wherein the thin film is thinner than about 0.1mm.

(Emphasis added).

As MPEP §2143.01 states:

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of

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the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

(Emphasis added). It is not clear how the Examiner intends to modify the teachings of Leonard and Wang or Leonard and Eastman to arrive at the claimed method. As MPEP §2143.01 states:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

As stated in MPEP §2143.01:

The mere fact that references can be combined or modified do not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

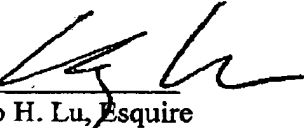
As stated earlier, Leonard requires high speed rotation of the pipe in his method where the teaching of vibration of Wang can't be used to replace the rotation requirement. Leonard has taken in combination with Wang with the knowledge level of "one skilled in the art" produces an untenable argument that the present invention is obvious. To modify the references in order to suggest the present invention would drastically change the principle of operation of all the references. Meantime, Leonard and Eastman use total different ways to control the thickness of the wick layer from this application does. Although Eastman can form a 0.254-0.508 mm thickness layer, however, it requires using a non-bonding base fixture and a mandrel to form the desired thickness. And Leonard requires using sleeves and high speed rotation of the pipe to set the thickness of the wick layer. Therefore, Either Leonard in view of Wang or Leonard in view of Eastman does not suggest forming a thin layer as the applicant does in this application.

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If the Examiner believes that a further telephonic interview will facilitate allowance of the claims, he is respectfully requested to contact the undersigned at (610) 446-5886. For the reasons stated above, Applicants respectfully assert that the pending claims are in condition for allowance. Reconsideration and allowance of the pending claims are respectfully requested.

Respectfully submitted,

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